swinging the X-ray detecting device in translational motion about a straight line as an axis, the straight line lying in a plane of the section of the sample, while maintaining an incidence plane of the X-ray detecting device parallel to the section of the sample;

applying X-rays to the sample with the X-ray source while rotating the X-ray source about the straight line in synchronization with said swinging of the X-ray detecting device; and

detecting X-rays passing through the sample with the X-ray detecting device.

22. The method of claim 21, wherein the sample is placed on a stage and the section of the sample is vertical to the stage.

23. The method of claim 21, wherein the sample is placed on a stage and the section of the sample is out of vertical to the stage.

24. The method of claim 21, wherein the sample is placed on a stage and the straight line is vertical to the stage.

25. An X-ray inspection apparatus, comprising:

an X-ray source;

an X-ray detecting device operable to detect X-rays, wherein said X-ray detecting device and said X-ray source are positioned relative to each other so that a sample can be placed there between and so that X-rays emitted from said source to pass through a sample can be detected by said X-ray detecting device, said X-ray detecting device having an X-ray incidence plane arranged to be parallel to a straight line;

a swinging means for swinging said X-ray detecting device in translational motion about the straight line as an axis while said X-ray incidence plane is maintained facing in the same direction; and

a rotating means for rotating said X-ray source about the straight line as an axis of rotation in synchronization with said X-ray detecting device.

6 26. The apparatus of claim 25, wherein:

a stage is located between said X-ray detecting device and said X-ray source for having the sample placed thereon such that a subject section of the sample is in a plane containing the straight line and parallel to said X-ray incidence plane; and

the section is vertical to said stage.

1 27. The apparatus of claim 25, wherein:

a stage is located between said X-ray detecting device and said X-ray source for having the sample placed thereon such that a subject section of the sample is in a plane containing the straight line and parallel to said X-ray incidence plane; and

the section is out of vertical to said stage.

8 28. The apparatus of claim 25, wherein the straight line is vertical to said stage.

9 29. The apparatus of claim 26, wherein the straight line is vertical to said stage.

10 30. The apparatus of claim 25, and further comprising a sliding mechanism for sliding said X-ray detecting device in a direction perpendicular to said X-ray incidence plane.

11 31. The apparatus of claim 30, and further comprising a stage transfer device for two-dimensionally transferring a stage on which the sample is placed.

12 32. The apparatus of claim 25, and further comprising a stage transfer device for two-dimensionally transferring a stage on which the sample is placed.

13 33. An X-ray inspection apparatus comprising:

an X-ray source;

a plurality of X-ray detecting devices operable to detect X-rays, wherein said X-ray detecting devices and said X-ray source are positioned relative to each other so that a sample can be placed there between and so that X-rays emitted from said source to pass through a sample can be detected by said X-ray detecting devices, each of said X-ray detecting devices having an X-ray incidence plane; and

a rotating means for rotating said X-ray source about a straight line as an axis of rotation;

wherein said X-ray detecting devices are positioned so as to be able to form a uniform geometric relationship with said X-ray source on the basis of a plane that includes the straight line located at a sample position between said X-ray detecting devices and the X-ray source.

14 ~~34~~. The apparatus of claim 33, wherein said X-ray detecting devices are positioned along an arc which has the straight line extending through the center thereof.